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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/589,433

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Anthony Osborne Dye

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EXAMINER

TRIEU, THAI BA

ART UNIT

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3748

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/589,433	Applicant(s) DYE, ANTHONY OSBORNE	
	Examiner THAI BA TRIEU	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 August 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/15/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The Preliminary Amendment filed on August 15, 2006 is acknowledged.

Claims 3-4, 7, 11-13, and 18 were amended.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The listing of references in the specification (See Page 5, line 18, Page 6, line 3, and Page 17, line 6) is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "68" has been used to designate both **"entire axial length of the tip or tip leading edge 68"** (See Page 17, lines 27- 28, and Page 18, line 2) and **"linear bearing 68"** (See Page 18, lines 13-14). Corrected drawing sheets in

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compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show ***"direct drive coupling 28"*** (See Page 9, line 11, Page 12, line 20, etc...) as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the

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remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7 and its dependent claims 8-13, and claim 18 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 7, line 2, the recitation of "can be controlled" renders the claim indefinite, since it is not clear that under which condition the maximum chamber of said variable volume chamber **can be** controlled; and under which condition the maximum chamber of said variable volume chamber **cannot be** controlled.

Applicant is identify theses conditions or to revise the claimed features.

In Claim 13, the recitation of "***a controller***" in lines 1-2 is a double recitation.

Claim 18 recites the limitation "***the first and second displacement devices***" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6, and 14-18 rejected under 35 U.S.C. 102(b) as being anticipated by Kauder et al. (Pub. Number EP 0 222 082 A1).

Regarding claims 1-4 and 6, Kauder discloses an apparatus for providing forced aspiration to an internal combustion engine (Not Numbered), the apparatus comprising:

a first displacement device (SM) for being driven by exhaust gas from an internal combustion engine to which the apparatus is in use mounted; and,

a second displacement device (SL) operable to compress combustion gas for provision to an engine to which the apparatus is in use mounted;

the first (SM) and second (SL) displacement devices being coupled such that when in use the first displacement device is driven and causes the second displacement device to operate (See Figures 2 and 8);

in which the first (SM) and second (SL) displacement devices are coupled by a common shaft of rotation (Not Numbered) (See Figures 2 and 8);

a drive (Not Numbered) coupling for coupling the first (SM) and/or second (SL) displacement device to an engine crank shaft (Not Numbered) of an engine to which the apparatus is in use mounted (See Figures 5 and 8);

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in which at least one of the first (SM) and second (SL) displacement devices comprises a lobed rotor and a recessed rotor arranged such that on rotation of the lobed rotor and the recessed rotor, a lobe from the lobed rotor enters a recess from the recessed rotor to define a variable volume chamber for respectively compression of exhaust gas or expansion of combustion gas; and

in which the recess and the lobe extend helically in a direction parallel to the axis of rotation of the corresponding rotor (See Figures 2, 5, and 8; Pages 1-2 of the machine translation copy).

Regarding claims 14-16 and 18, Kauder an internal combustion engine (Not Numbered), the engine comprising:

one or more swept volume chambers for receiving a fuel and air mixture (within the cylinder);

an apparatus for providing forced aspiration (via SL) to the swept volume chambers, the apparatus comprising an expander (SM) to receive exhaust gas from the engine (Not Numbered) and a compressor (SL) driven by the expander (SM) to compress air for provision to the one or more swept volume chambers, wherein the expander and the compressor are each displacement devices (screw type) (See Figures 2, 5 and 8);

wherein the expander (SM) and the compressor (SL) are connected by a common shaft (Not Numbered) of rotation (See Figures 2 and 8);

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wherein the common shaft (Not Numbered) of rotation is connected to an output shaft (Not Numbered) of the engine in such a way as to be able selectively to provide a driving force to the engine output shaft and to receive a driving force therefrom;

in which at least one of the first (SM, SL) and second displacement (SM, SL) devices comprises a lobed rotor and a recessed rotor arranged such that on rotation of the lobed rotor and the recessed rotor, a lobe from the lobed rotor enters a recess from the recessed rotor to define a variable volume chamber for respectively compression of exhaust gas or expansion of combustion gas (See Figure 5 and 8, Pages 1-2 of the machine translation copy).

Regarding claim 17, Kauder discloses an engine (Not Numbered) having an apparatus mounted thereon, the apparatus being for providing forced aspiration to the engine, the apparatus comprising:

an expander (SM) to be driven by exhaust gas from one or more swept volume chambers of the engine; and,

a compressor (SL) to be driven by the expander to compress air for provision to the one or more swept volume chambers of the engine,

wherein a connection is provided between the apparatus (SM, SL) and the engine output shaft (Not Numbered) to enable power to be taken from the engine to drive the compressor (SL) when insufficient exhaust gas (SM) to drive the expander is generated by the engine and to provide power to the engine output shaft from the

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apparatus when sufficient exhaust gas is generated (See Figures 2, 5, and 8, Pages 1-2 of the machine translation copy).

Claims 1-2 and 14-17 rejected under 35 U.S.C. 102(b) as being anticipated by Baumgartner (Pub. Number DE 36 36 048 A1).

Regarding claims 1-2, Baumgartner discloses an apparatus for providing forced aspiration to an internal combustion engine, the apparatus comprising:

a first displacement device (6) for being driven by exhaust gas from an internal combustion engine to which the apparatus is in use mounted; and,

a second displacement device (3) operable to compress combustion gas for provision to an engine to which the apparatus is in use mounted;

the first and second displacement devices (6, 3) being coupled such that when in use the first displacement device is driven and causes the second displacement device to operate (See Figure 1);

in which the first and second displacement devices (6, 3) are coupled by a common shaft of rotation (Not Numbered) (See Figure 1, Pages 5-6 of a certified translation copy).

Regarding claims 14-16, Baumgartner discloses an internal combustion engine (1), the engine comprising:

one or more swept volume chambers (within the cylinder) for receiving a fuel and air mixture;

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an apparatus (3, 6) for providing forced aspiration to the swept volume chambers (via 3), the apparatus comprising an expander (6) to receive exhaust gas from the engine and a compressor (3) driven by the expander to compress air for provision to the one or more swept volume chambers, wherein the expander and the compressor are each displacement devices;

wherein the expander (6) and the compressor (3) are connected by a common shaft of rotation (Not Numbered) (See Figure 1);

wherein the common shaft (not Numbered) of rotation is connected to an output shaft (Not Numbered) of the engine in such a way as to be able selectively to provide a driving force to the engine output shaft and to receive a driving force therefrom. (See Figure 1, Pages 5-6 of a certified translation copy).

Regarding claim 17, Baumgartner discloses an engine (1) having an apparatus mounted thereon, the apparatus being for providing forced aspiration to the engine, the apparatus comprising:

an expander (6) to be driven by exhaust gas from one or more swept volume chambers of the engine; and,

a compressor (3) to be driven by the expander to compress air for provision to the one or more swept volume chambers of the engine,

wherein a connection (2) is provided between the apparatus and the engine output shaft (Not Numbered) to enable power to be taken from the engine to drive the compressor (3) when insufficient exhaust gas to drive the expander (6) is generated by

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the engine and to provide power to the engine output shaft from the apparatus when sufficient exhaust gas is generated (See Figure 1, Pages 5-6 of a certified translation copy).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kauder (Pub. Number EP 0 222 082 A1), in view of Dye (Pub. Number WO 98/351136 A1 or US Patent Number 6,176,695 B1).

Kauder discloses the invention as recited above; and further discloses each of the first displacement device and the second displacement device comprising a lobed rotor and a recessed rotor arranged such that on rotation of the lobed rotor and the recessed rotor, a lobe from the lobed rotor enters a recess from the recessed rotor to define a variable volume chamber (See Figures 2, 5, and 8, Pages 1-2 of the machine translation copy).

However, fails to disclose the recess and the lobe extend straight in a direction parallel to the axis of rotation of the corresponding rotor; an apparatus arranged such that the maximum volume of said variable volume chamber being controlled; and a control device associated with at least one of the first and second displacement devices

Dye teaches that it is conventional in the art of controlling a lobed rotor machine, to utilize the recess and the lobe extend straight in a direction parallel to the axis of rotation of the corresponding rotor (See Figure 1, Page 7, lines 33-36, and Page 8, lines 1-14; Figure 1, Column 4, lines 20-36);

an apparatus arranged such that the maximum volume of said variable volume chamber can be controlled (See Figure 1, Page 7, lines 33-36, and Page 8, lines 1-14; Figure 1, Column 4, lines 20-36); and

a control device (2) associated with at least one of the first and second displacement devices, the control device being controlled in dependence on a feedback signal generated in dependence on an output of the first displacement device to vary the maximum volume of said variable volume chamber of the at least one of the first and second displacement devices (See Page 7, lines 16-36, Page 8, lines 1-30; Column 3, lines 60-67, and Column 4, lines 1-49).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the recess and the lobe extend straight in a direction parallel to the axis of rotation of the corresponding rotor; an apparatus arranged such that the maximum volume of said variable volume chamber can be controlled; and a control device associated with at least one of the first and second displacement devices, as taught by Dye, to improve the efficiency of the Kauder device, since the use thereof would have controlled the maximum volume or mass of the charge during operation of the rotors.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kauder (Pub. Number EP 0 222 082 A1), in view of Dye (Pub. Number WO 98/351136 A1 or US Patent Number 6,176,695 B1), and further in view of Moore et al. (Patent Number 4,292,806).

The modified Kauder device discloses the invention as recited above; however fails both of the first and second devices having a corresponding control device attached thereto.

Moore et al. teaches that it is conventional in the art of turbocharger control system, to utilize both of the first and second devices (turbine 18, and compressor 20) having a corresponding control device (30, 32; 56, 58) attached thereto (See Figure 1).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized both of the first and second devices having a corresponding control device attached thereto, as taught by Moore, to improve the efficiency of the modified Kauder device, since the use thereof would have optimize operating condition for the turbocharged engine through out the power operating range without entering the region of the compressor instability or increasing back pressure losses.

Claims 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kauder (Pub. Number EP 0 222 082 A1), in view of Dye (Pub. Number WO 98/351136 A1 or US Patent Number 6,176,695 B1), and further in view of either Kolmanovsky (Patent Number 6,035,639) or Bischoff (Patent Number 6155049)

The modified Kauder device discloses the invention as recited above; however fails to disclose pressure sensors and their locations.

Kolmanovsky/Bischoff teaches that it is conventional in the turbocharged internal combustion engine art, to utilize a pressure sensor (54 of Kolmanovsky, 14 of Bischoff) mounted on an input to the first device (Read as turbine 38 of Kolmanovsky, turbine 17 of Bischoff) to detect a pressure at the input to the first device (Read as turbine 38 of Kolmanovsky, turbine 17 of Bischoff) and provide a signal in dependence thereon for controlling the or each control device (24 of Kolmanovsky, 10 of Bischoff) (See Figure 1, Column 4, lines 1-10 of Kolmanovsky, Figure 1, Column 5, lines 35-56 of Bischoff);

a pressure sensor (50 of Kolmanovsky, 15 of Bischoff) mounted on an output of the second device (Read as compressor 36 of Kolmanovsky, compressor 8 of Bischoff) to detect a pressure of combustion gas output from the second device (Read as compressor 26 of Kolmanovsky, compressor 8 of Bischoff) and provide a signal in dependence thereon for controlling the or each control device (24 of Kolmanovsky, 10 of Bischoff) (See Figure 1, Column 4, lines 1-10 of Kolmanovsky, Figure 1, Column 5, lines 35-56 of Bischoff); and

the controller (24 of Kolmanovsky, 10 of Bischoff) arranged to receive the signal from the pressure sensor (from 54, 50 of Kolmanovsky, from 14, 15 of Bischoff) and provide a control signal to the or each control device to control the maximum possible volume of the respective variable volume chamber (via controlling variable vanes 44 of the turbine 38 of Kolmanovsky, controlling variable vanes 9 of the turbine of Bischoff)

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(See Figure 1, Column 4, lines 1-10, Figure 1, Column 5, lines 57-67 and Column 6, lines 1-6 of Bischoff).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized pressure sensors and their locations, as taught by Kolmanovsky/Bischoff, to improve the efficiency of the modified Kauder device, since the use thereof would have provided an accuracy in controlling the turbocharged internal combustion engine system.

Prior Art

The IDS (PTO-1449) filed on August 15, 2006 has been considered. An initialized copy is attached hereto.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THAI BA TRIEU whose telephone number is (571)272-4867. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TTB
February 15, 2009

/Thai-Ba Trieu/
Primary Examiner
Art Unit 3748